



FRANKIT

New Generation Digital Franking

Version 1.3
15 May 2003

Important:

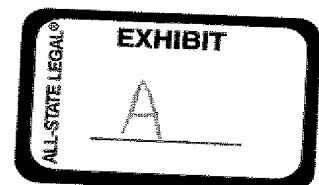
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Deutsche Post AG

Headquarters

Marketing Service Products Letter Mail

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Contents

Revision history	6
1. Digital Franking System	7
1.1 Goal	7
1.2 Description of the system	8
1.2.1 The digital franking model with Remote Setting Center	8
1.2.2 The digital franking model without Remote Setting Center	10
1.3 General Regulations for Digital Franking	11
1.3.1 Supplier Contract	11
1.3.2 Agreements with Customers	11
1.3.3 Types of mail	11
1.3.4 Digital franking postage amount	11
1.3.5 Incorrectly franked mail	12
1.3.6 Validity of postage amounts	12
1.3.7 Posting and franking date	13
2. Prerequisites for Implementation	14
2.1 General Prerequisites	14
2.1.1 Norms, standards, and specifications	14
2.2 Technical system requirements	14
2.3 Postage Point communication with the Remote Setting Center	15
2.3.1 Loading, usage, security and postage credit information	16
2.3.2 Reduced postage credit during open payments	20
2.4 Postage Point communication without the Remote Setting Center	21
2.4.1 Loading, usage, security, and postage credit information	22
2.4.2 Reduced postage credit during open payments	24
2.5 Digital Franking Imprint	25
2.5.1 Components and characteristics	25
2.5.2 Additional services imprint replacing the advertising space (optional)	27
2.5.3 Matrix code specification	29
2.5.4 Print quality and readability	29
2.5.5 Test prints	30
2.5.6 Franking process	30

2.6	Hardware and software security requirements	30
2.6.1	Hardware requirements	31
2.6.2	Software requirements	32
2.6.3	Further aspects with regard to the complete system	34
2.7	Contents of User Manuals	36
3.	Introduction Process	37
3.1	General information	37
3.1.1	Aims of the Introduction Process	37
3.1.2	Validity of the current version	37
3.2	Prerequisites	37
3.2.1	Reference to the supplier contract	38
3.2.2	Existing certification	38
3.2.3	Representation of technical interoperability	38
3.2.4	Hardware and software, including documentation	39
3.2.5	User handbook in German	40
3.2.6	System tests and results	40
3.2.7	Descriptions of internal quality assurance procedures	40
4.	Appendix A: Formats and Field Content	41
4.1	Meter-ID and serial number of a digital franking meter	41
4.2	The matrix code on a franking imprint	43
4.2.1	Postal data element "order management"	47
4.2.2	Postal data element "additional services"	48
4.2.3	Postal data element "return answer letter"	49
4.3	Postage-ID (postage credit information and validity)	49
4.4	Security information m_{secret}	51
4.5	Crypto string (security information)	51
4.6	Service-ID	52
4.7	Hash total, truncated (security information)	53
4.8	Product codes	53
4.9	Account franking (secured usage information)	54
4.10	Loading amount	58
4.11	Consolidated usage profile	58

4.12	Structure of a signed licence (without Remote Setting Center)	59
4.12.1	Data to be signed	60
4.13	Table of error codes	60
4.14	Dimensions of a franking imprint	61
5.	Appendix B: Security-related processes	62
5.1	Keys and Certificates (with Remote Setting Center)	62
5.1.1	Meter-individual encryption	62
5.1.2	Digitally signed P-Bulk information	63
5.2	Keys and Certificates (without Remote Setting Center)	63
5.2.1	Encryption and digital signatures	63
5.2.2	Certificates and signed licenses	63
5.2.3	Certification and signed licensing	64
5.2.4	Verification of signatures and certificates	65
5.2.5	Key replacement	65
5.3	Securing digital frankings	66
5.4	Processes in the protected area	67
5.4.1	Administration of current postage value	67
5.4.2	Administration and use of communication key	67
5.4.3	Decryption and storage of m_{secret} security information	67
5.4.4	Creation of hash totals with security information m_{secret}	68
5.4.5	Account franking protection by creation of hash totals with m_{secret}	68
5.4.6	Ascending registers	68
5.4.7	Descending register	68
5.4.8	Usage volume since previous loading event	68
5.4.9	CryptoString	68
5.4.10	Usage profile	69
5.4.11	Further processes in the model without Remote Setting Center	69
5.5	Postage Point data exchange (with Remote Setting Center)	70
5.5.1	Upload data file	70
5.5.2	Download file	71
5.6	Postage Point data exchange (without Remote Setting Center)	71
6.	Appendix C: Communication interfaces	76
6.1	Data exchange via P-Bulk	76
6.1.1	Basis of P-Bulk	76

6.1.2	Structure of P-Bulk	76
6.1.3	The <HEAD> section of P-Bulk	77
6.1.4	The <BODY> section of P-Bulk with <METER> and <SEC>	78
6.1.5	<SIG> (optional)	81
6.1.6	Document Type Definition of P-Bulk	81
6.2	Data exchange via P-Talk	82
6.2.1	Basis of P-Talk	82
6.2.2	Structure of P-Talk	82
6.2.3	The <HEAD> section of P-Talk	83
6.2.4	The <BODY> section of P-Talk	84
6.2.5	Document Type Definition of P-Talk	88
6.3	Downloading an amount of postage („metersec“)	89
6.3.1	First transmission from the digital meter to the Postage Point	89
6.3.2	First response to the digital meter by the Postage Point	89
6.3.3	Second transmission from the digital meter to the Postage Point	90
6.3.4	Second response to the digital meter by the Postage Point	91
6.3.5	Third transmission from the digital meter to the Postage Point	91
6.3.6	Third response to the Customer System by the Postage Point	92
6.4	Products and prices	93
7.	Appendix D: Ident code for additional services (BZL)	94
7.1	Linear Barcode	94
7.1.1	Background	94
7.1.2	Barcode content	94
7.1.3	Barcode size according to DIN EN 799	95
7.1.4	Composition of the ident code	97
7.2	Additional services displayed in clear text	99

be left aligned to that anchor point. Consequently, the distance between the right edge of the international variant of the barcode and the left edge of the matrix code will measure 13.25 mm. If printers are used with other resolutions than 300 dpi, the width of the barcode may vary. If a barcode must be wider than 47.25 mm, then the left edge of this barcode will move to the left, still ensuring a distance of 5 mm between the barcode's right edge and the matrix code's left edge. If the width of the code is smaller than 47.25 mm, the dimensions as stated above in the first part of this paragraph will be valid (the code will *not* move to the right). Content and specification of the barcode will be covered in section 7.

- The big letter “**R**” is used as to indicate additional services. The text must be in sans serif, regular-style Arial font with an uppercase letter height of 11.0 mm, resulting in a width of 10 mm. The distance between the left edge of the character and the left edge of the barcode measures 15 mm. This distance ensures that there is a minimum blank space of 5 mm left of the barcode.
- There is a 1-pt strong **line or stroke** above the barcode, which has the same width as the barcode used (i.e., 47.25 or 39 mm). The center of the stroke is 1 mm above the upper edge of the barcode.
- **The barcode content** is repeated in plain text above the line or stroke over the barcode. Text must be in sans serif, regular-style Arial font with an uppercase letter height of 2.0 mm. The distance between the center of the stroke and the lower edge of the plain text line is 1 mm, which means that the distance between the lower edge of the plain text line and the upper edge of the barcode is 2 mm. The plain text line starts 7 mm right of the left edge of the barcode. This position will ensure that plain text is almost centered over both the domestic and international versions of the barcode. For improved readability, plain text information is grouped. The first group holds two uppercase letters. The second group, consisting of two digits, follows after two blank spaces. The following two groups of three digits each are both separated by one blank space. After another two blank spaces, a three-character group follows, which contains the check number and two letters for the country code. Only in the case of domestic additional services does a final group of three digits containing the product code follow, again separated by two blank spaces.
- The **additional services are displayed in clear text** in two lines, which are left aligned with the barcode. The distance between the lower edge of the lower line and the upper edge of the barcode measures 5.5 mm. The line space between the lower and the upper line is 3 mm. For domestic additional services, text must be in italicized, sans serif, uppercase Arial letters with an uppercase letter height of 2.0 mm. For International additional services, upper- and lowercase characters must be used in regular style, with an upper case letter height of 1.75 mm. For separation of two different additional services, two blank spaces will be introduced. If only one line is needed, the lower of both lines must be chosen. There must be a minimum distance of 3 mm between the text and the matrix code. Section 7.2 describes how the two lines have to be filled.

The franking imprint must not be printed on dark paper or very fibrous paper (such as recycled paper, because the matrix code can easily smear).

The print on the franking imprint should be in a resolution of 300 dpi and in blue ink (as per specification) and on white or other pale-colored paper.

Franking imprints printed on units working to a lower resolution may not meet quality requirements. The test requirements are applicable and must be observed.

2.5.5 Test prints

A digital franking meter can produce test prints, i.e., franking imprints which appear to be valid franking imprints but are not intended for consignments; they serve as control prints and are useful for fine adjustment of the printer.

In this case, the franking meter must ensure that Deutsche Post does not recognize such franking imprints as valid franking imprints. This is achieved by positioning the word 'MUSTER' (sample) across the matrix code. For test prints, the data contents of the matrix code must be rendered illegible, either by the inscription mentioned above or by other means. In addition, the font format for the postage amount must be set to 'strike through' to ensure the postage amount is crossed out on any such test prints produced.

Apart from real (paid) franking imprints and specially marked test prints, no nil value imprints may be produced.

2.5.6 Franking process

To create a digital franking imprint, it is necessary to select a particular product. The product is identified by a product code supplied by Deutsche Post, which is a unique code corresponding to a combination of basic product plus additional service(s). The product code is incorporated into the matrix code and into the usage profile (see sections 4.2 and 4.11).

If mail is to be franked on behalf of a third party or if a franking meter is jointly used by a third party, then the Deutsche Post's customer number (EKP no.) of the third party must be entered into the franking meter. Entering an EKP no. might also be required for using special products in the future. If Deutsche Post issues a job number for franking (no matter whether mail is franked for or by a third party or not), then the job number must be entered into the franking meter. If both EKP and job number are applicable, only the job number has to be entered. Any of these entries must be executed before starting the franking process.

If a return answer letter is franked, the recipient's postal code must be entered into the franking meter.

2.6 Hardware and software security requirements

Intrinsic franking meter security is assured by the tamper-proof, protected area within the franking meter and the "cryptographic module," which conforms to the parameters described in *FIPS PUB 140-2, level 3, Security Requirements for*

4.2 The matrix code on a franking imprint

Version 1 of the matrix code (vgl. Byte f4) contains 84 bytes: f1 to f84

Byte no.	Length	Meaning	Data content	Comments
f1, f2, f3	3	Post company (ASCII)	„DEA“ (ASCII) or '44 45 41'	Deutsche Post AG

Byte no.	Length	Meaning	Data content	Comments
f4	1	Type and version of franking	'03'	Meter franking (FRANKIT), Version 1 The latest type and can be taken from s4 of the Service ID, see section 4.6.

Byte no.	Length	Meaning	Data content	Comments
f5	1	Version of products/prices	'XX'	The current version of products and prices has to be mentioned here. The latest version number can be taken from s5 of the Service ID, see section 4.6.

Byte no.	Length	Meaning	Data content	Comments
f6	1	Supplier identification	'XX'	Assigned by Deutsche Post to every supplier.
f7	1	Model no.	'XX'	To be used by every supplier for each new model by arrangement with Deutsche Post, starting at '01' (first model) and increasing.
f8, f9, f10	3	Model device number	'XX XX XX'	To be used by every supplier for each model, starting at '00 00 01' and increasing to 'FF FF FF'.
				Bytes f6 to f10 correspond to the franking machine serial number (i.e. the first 5 bytes of the meter ID), see section 4.1.

Byte no.	Length	Meaning	Data content	Comments
f11, f12	2	Fee or franked value	'XX XX' in the format EEEEC (decimal)	Decimal representation of the franked value, currency as per currency indicator. (E = digits before and C = digits after the decimal point). Example: 0.56 Euros: decimal: 00056; hexadecimal: '00 38'

Byte no.	Length	Meaning	Data content	Comments
f13, f14	2	Franking date	'XX XX' in the format DDYY (decimal)	Date format: decimal representation of the year in the format DDYY, whereby "DD" represents the current day in the year (up to 365 or 366) and "YY" represents the last two digits of the year. (Example: 24 th July 2003, i.e. 205 th day in the year 2003; decimal: 20503; hexadecimal: '50 17')

Byte no.	Length	Meaning	Data content	Comments
f15, f16	2	Product code	'XX XX'	The product code is used to assign the franking printout to a particular product group. A separate description of the product code and a list of product groups to use is given in section 4.8.

Byte no.	Length	Meaning	Data content	Comments
f17	1	Key phase indicator	'XX'	Only for internal post purposes. Value to be taken unaltered from the current Postage ID, see section 4.3.

Byte no.	Length	Meaning	Data content	Comments
f18	1	Currency indicator	'01'	Euro
				Value to be taken unaltered from the current Postage ID, see section 4.3.

4.7 Hash total, truncated (security information)

A hash total is formed to provide security for normal franking (see section 4.2) and the “account franking” (see section 4.9). The hash total is generated in the protected area of the franking meter using the franking data to be protected and the m_{secret} key information, which is securely stored in the protected area.

The hash total is formed within the protected area of the franking meter by combining 80 bytes of unsecured information with the 16-byte long Postage ID and a the 16 bytes of (decrypted) m_{secret} security information. Thus, in total the hash algorithm will be applied to 112 bytes of data.

When forming the hash total in order to secure a normal franking matrix code, the first 80 bytes of the matrix code (f1 to f80) have to be taken.

When forming the hash total in order to secure the account franking, the first 80 bytes of the account franking (a1 to a80) have to be taken. Although the Postage ID is already a component of the account franking, it will again be added for the creation of the hash total for reasons of consistency. So the hash total of the account franking will also be generated by combining the 80 bytes with the 16-byte long Postage ID and a the 16 bytes of unencrypted m_{secret} security information.

Digital meters must be capable of securing the account franking by creating a hash total. The hash total will only be created upon request by the Postage Point, see section 5.5.2.

SHA-1 is used for the generation of a hash total. The Secret Suffix Method has to be applied (this means that the m_{secret} security information is tagged on at the end). The first four bytes of the resultant hash total are incorporated into the matrix code as “truncated hash”.

4.8 Product codes

Deutsche Post will provide the 2-byte product code in the form of a table.

Byte no.	Length	Meaning	Data content	Comments
ps1, ps2	2	Basic product with additional services (taking into account the destination, dimensions and weight)	'XX XX'	Deutsche Post will provide the supplier with a table.

Note: The product code will indicate whether or not an additional services imprint is printed together with the franking imprint. Therefore, identical combinations of basic products and additional services will require different product codes depending on the kind of imprint.

The table of product codes provided in digital form by Deutsche Post contains product codes in decimal representation, description, postage fee, additional information (size and weight), and plain text to be included in the franking imprint for all possible combinations of basic products and additional services, see section 6.4.

Year/Month	Product code	Number of frankings	Total revenue	Customer Number (EKP no.)
Date format: YYYYMM numeric in ASCII format. Example: July 2002 is represented as: 200207	'XX XX' (2 bytes) Product code of the franking marks pro- duced (corresponds to the product code on the franking print- out). Represented in half-bytes	Numerical represen- tation of the number of given products franked in this period, in ASCII format.	Numerical represen- tation of the total revenue for a given product during this period, in ASCII for- mat. The last two digits are to be read as the dig- its after the decimal point. Currency as per cur- rency indicator in the account franking	Numerical represen- tation of the postal EKP customer num- ber in ASCII format. If the franking is per- formed on behalf of or by a third party, then their customer number (EKP no.) should be supplied to Deutsche Post as part of this entry. If the franking is in the customer's own name, this informa- tion needs not to be given.

Example:

Year/Month	Product code	Number of frankings	Total revenue	Customer Number (EKP no.)
200207	'00 01'	110	6160	
200207	'00 02'	240	26880	
200207	'00 02'	240	26880	5111111111
200208	'00 02'	110	12320	
Etc.				

4.12 Structure of a signed licence (without Remote Setting Center)

In the model without Remote Setting Center „signed licences“ are used for the authentication of both communication partners, see section 5.2.

Both signed licence of a digital meter and signed licence of the Postage Point box comprise two components:

- Data to be signed, consisting of Meter-ID, the public key for encryption (RSA 1024 bit) and the public key for generating digital signatures (RSA 1024 bit). Due to the public exponent the keys are actually longer than 1024 bit; this value only represents the “module” of the key.
- A digital signature of the data to be signed, applying PKCS#7.

sage (with the attribute TYPE="errorcode") which can be analyzed by the digital meter (section 4.13).

```
<P-TALK>
  <HEAD>
    <VERSION NUMBER="1.0" OWNER="DEA" USAGE="1" LANGUAGE="de"/>
    <ACTION TYPE="metersec" STEPS="6" CURRENT="2" STATUS="invalid"/>
  </HEAD>
  <BODY>
    <MESSAGE TYPE="cert" CRYPT="no" SIGNATURE="0">signed licence of the Postage Point box
P1,2PB
  </MESSAGE>
    <MESSAGE TYPE="errorcode" CRYPT="no" SIGNATURE="1">Error code</MESSAGE>
    <SIGNATURE>Digital signature of the error code</SIGNATURE>
  </BODY>
</P-TALK>
```

6.3.3 Second transmission from the digital meter to the Postage Point

6.3.3.1 Standard communication (STATUS="ok")

A series of necessary data for requesting a new amount of postage is transmitted to the Postage Point in the second transmission by the digital meter, in the following message:

```
<P-TALK>
  <HEAD>
    <VERSION NUMBER="1.0" OWNER="DEA" USAGE="1" LANGUAGE="de"/>
    <ACTION TYPE="metersec" STEPS="6" CURRENT="3" STATUS="ok"/>
  </HEAD>
  <BODY>
    <MESSAGE TYPE="yoursession" CRYPT="yes" SIGNATURE="1"> Session ID code
SK1PB</MESSAGE>
    <MESSAGE TYPE="mysession" CRYPT="yes" SIGNATURE="2">Request Key
RKPB</MESSAGE>
    <MESSAGE TYPE="stamp" CRYPT="yes" SIGNATURE="3">Account franking APB</MESSAGE>
    <SIGNATURE>Signature Sigmeter(SK1PB, RKPB, APB)</SIGNATURE>
    <DATALOAD>
      <SUMMARY>
        <MONTH>Reference month</MONTH>
        <PRODUCT>Product code</PRODUCT>
        <NUMBER>Number of frankings</NUMBER>
        <VALUE>Total revenue</VALUE>
      </SUMMARY>
      <SUMMARY>
        <MONTH>Reference month</MONTH>
        <PRODUCT>Product code</PRODUCT>
        <NUMBER>Number of frankings</NUMBER>
        <VALUE>Total revenue</VALUE>
        <CONTRACT>Customer number of third party</CONTRACT>
      </SUMMARY>
    </DATALOAD>
  </BODY>
</P-TALK>
```

6.3.3.2 Special communication

The digital meter can cancel the entire communications session in response to an invalid message from the Postage Point or at the user's request:

```
<P-TALK>
  <HEAD>
    <VERSION NUMBER="1.0" OWNER="DEA" USAGE="1" LANGUAGE="de"/>
    <ACTION TYPE="metersec" STEPS="6" CURRENT="3" STATUS="cancel"/>
  </HEAD>
  <BODY>
```

Example:

Identification number	4	7	3	1	2	4	8	2
Weighing factors	8	6	4	2	3	5	9	7
Multiplication result	32	42	12	2	6	20	72	14
Sum of multiplications		+		+		+	+	= 200
Division	200 : 11 = 18 remaining 2							
Subtraction	11 - 2 = 9							
Check number	9							

Identification number with check number 4 7 3 1 2 4 8 2 9

Product codes for the additional services imprint (only domestic)

Domestic additional services are identified by a product code, see the following table. International additional services will not be coded.

Additional service product code	Description (domestic)
110	Einschreiben
111	Einschreiben Eigenhändig
112	Einschreiben Rückschein
113	Einschreiben Eigenhändig Rückschein
200	Einschreiben Einwurf